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ON THE  
ADVANTAGES TO BE ATTAINED  
BY  
A REVISION AND RE-ARRANGEMENT  
OF THE  
CONSTELLATIONS,  
WITH ESPECIAL REFERENCE TO THOSE OF  
THE SOUTHERN HEMISPHERE,  
AND ON THE PRINCIPLES UPON WHICH SUCH RE-ARRANGEMENT  
OUGHT TO BE CONDUCTED,

BY  
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ON  
A REVISION AND RE-ARRANGEMENT  
OF  
THE CONSTELLATIONS,

§c. §c.

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THE idea of parcelling out the most conspicuous stars in groups, and attaching to such groups distinctive names, must have occurred in the very infancy of astronomy, and indeed antecedent to all astronomical observation properly so called. Men naturally attach names to any thing that catches their attention; and it seems impossible that the largest stars, and the more striking groups of stars, should not have obtained names as early as any terrestrial objects equally remarkable; to say nothing of their utility as marks of direction in nightly journeys over desolate tracts, and in the first voyages in which land was lost sight of. The bright star *Sirius*, and two or three more of the first magnitude, for their lustre; the seven stars of the *Great Bear*, for their use in finding the pole of the heavens (which, in the earlier ages of history, held a situation much more pointedly in relation to that fine group than it does at present); the constellation *Orion*, and one or two others, for their peculiar brilliancy or remarkable forms; and the Milky Way,—would all, probably, be familiar to the nightly wanderer, the nomade, or the seaman, long before the sun's motion in the ecliptic came to be recognized; and even before their visibility at certain seasons, and disappearance at others, came to be noticed as indications of the progressive changes of the year.

As these phenomena, however, became matter of observation, zodiacal constellations would draw attention, not for their own sake, but as means of noting more exactly the sun's progress and adjusting the reckoning of time; while others would be added subsequently, or simultaneously, as accident, or the awakened spirit of observation, might decide.

In framing these earlier constellations, there can be no doubt that well-

defined natural groups of conspicuous stars would be selected, such as *Orion* itself, the head of *Taurus*, the sickle-formed group of *Leo*, the zig-zag of *Cassiopeia*. These and such as these would almost certainly be among the first to receive names, and to constitute the subject matter of the earliest sidereal astronomy. The same principle would prevail, at first, even in the zodiac; where, however, the requirements of advancing civilization, by creating a necessity for an equable subdivision of the total circumference of that zone, would in time give rise to a departure from it, and cause the insertion of constellations little conspicuous of themselves (such as *Cancer*, *Libra*, *Pisces*, &c.) for the sake of giving individuality and name to each of its aliquot parts. That such has been the case we have historical evidence.

In the extra-zodiacal regions, however, no principle, either of subdivision or nomenclature, appears to have prevailed; but there seems no reason to doubt that, in the primitive grouping and parcelling out of the stars, whatever it might be, the actual aspect of the heavens was consulted, and that, whoever attached a name to a constellation, or a constellation to a name, did so with some certain definite configuration of stars present to his sight or recollection. It is singular, however, how few tolerable resemblances to objects of ordinary terrestrial occurrence can be made out among the stars. There is but one group (*Orion*) which can any how be tortured into a good symmetrical representation of a human figure; and even this, to be seen to advantage, must be viewed from a southern latitude, when the stars  $\alpha$  and  $\gamma$ , which in our maps form the shoulders, will appear as the knees of the figure, *Rigel* as the head, and  $\beta$  *Eridani* as one of the shoulders, forming a really superb and majestic outline, worthy of a hero or a demigod. The *Scorpion*, when the whole tail is seen, is also admirably represented: the fine star  $\lambda$ , which is nearly of the first magnitude, forming the bulb of its sting; and the adjacent star  $\nu$ , of a magnitude between the third and fourth, the sting itself. A sickle (as above mentioned) is suggested by the principal group of the *Lion*, and a plough by the bright stars of the *Bear*. The constellation *Cygnus* forms a much better cross than the unsymmetrical group so called in the southern hemisphere; and, on the other hand, the *Crane* of the southern sky (with the addition of the stars  $\alpha$  and  $\gamma$  *Tucani*) dots out a very fair likeness to a long-necked bird in the act of flight, to which the group of *Cygnus* has little resemblance. The frontlet of the *Bull*, too, may be considered as tolerably represented; but beyond these (for both the

*Crowns* are incomplete and unsymmetrical), I do not call to mind any configurations which (so far as my own imagination is concerned) associate themselves either with their actual names or with any other objects.

Names, under such circumstances, must be imposed from other associations than those of mere form. As celestial denizens, gods, demigods, and heroes, would occur most readily; not merely to an imaginative people like the Greeks, but universally, as a consequence of a strong bias of our common nature, from which not even savages are exempt. "The Pampas Indians (says Capt. Head, *Rough Notes in the Pampas*, p. 121,) "believe in a future state, to which they conceive they will be transported as soon as they die. "They expect that they will then be constantly drunk, and that they will "always be hunting; and as they gallop over their plains at night, they will "point with their spears to the constellations in the heavens, which they say "are the figures of their ancestors, who, reeling in the firmament, are mounted "upon horses swifter than the wind, and hunting ostriches."

It is not, however, my present purpose to enter into any antiquarian discussions as to the origin of particular constellations, or the epochs at which they have been introduced into the heavens. The only question which I propose to consider in this paper is, how far, taking them as they stand at present, they are available for the actual purposes and wants of astronomy; or by what kind of alterations, or whether by any mere alterations, they can be made so; as also what are the reasons which render it desirable, and indeed necessary, to enter into a systematic revision of them at so advanced an epoch, and after having gone on for so many centuries without any such necessity being felt, or at least very strongly insisted on.

To the astronomer who knows the stars only through the medium of a catalogue arranged in order of right ascension, and who finds and identifies them in the heavens by the joint aid of such catalogues and of graduated instruments, it is of very little importance whether their distribution in constellations be made upon any principle or not. The use of constellations to such a one is chiefly to enable him to refer to a star by name: but even this, under the existing system of constellations, is not always to be done without incurring the risk of error, and inducing confusion; and that from various causes, among which may be mentioned the following, viz.:

1st. The want of care in naming new constellations, to avoid similarity of name with those already received; and indeed, in many cases, the bestowing purposely on a new constellation that of an old one with some adjunct, such

as major or minor, northern or southern, &c. Thus we have *Ursa Major* and *Minor*; *Leo Major* and *Minor*; *Canis Major* and *Minor*, and *Canes Venatici*; *Triangulum Majus*, *Minus*, and *Australe*; *Corona Borealis* and *Australis*; *Pisces*, *Piscis Australis* (or, as it is sometimes called, by a strange perversion of Latin, *Notius*!), and *Piscis Volans*; *Musca Borealis* and *Australis*, from which latter designation, if we would escape by calling it as it is done in some maps, *Apis*, we risk the worse confusion with its next neighbour *Apus*. Then, again, we have *Telescopium*, *Telescopium Herschelii*, and *Telescopium seu Tulus Astronomicus*; *Taurus* and *Taurus Poniatovii*; *Equuleus* and *Equuleus Pictoris*. Then, again, *Hydrus* is not without care distinguished in speech, writing, or print, from *Hydra*;\* to say nothing of the frequent embarrassment arising from the prevalence of constellations of this class, such as *Draco*, *Serpens*, &c. *Mons Mensæ* and *Mons Maenalus*, if we would avoid mistakes, must always be written and printed at full length, as must also *Sagitta* and *Sagittarius*, for the same reason. The *Quadrant*, the *Sextant*, and the *Octant*, as names for three distinct constellations, can scarcely be regarded as happily selected, if perfect freedom from chances of confusion be any criterion of what is desirable; and, altogether, when we consider the infinite range of nature, art, history, and mythology, which lay open to the choice of every one who conceived a new constellation to be needed, it must be confessed that our present list affords a no less extraordinary specimen of poverty of invention than it does of misconception of the ultimate purposes of nomenclature.

2dly. The great extent of some constellations gives rise to confusion in designating individual stars, in another way. After exhausting a Greek alphabet, a Roman has, in many instances, been resorted to, and in some also an Italic. This is a fertile source of mistakes; and when, as in the case of *Argo*, not only a Greek, but no less than three or more Roman alphabets are exhausted, it will be easily seen that the confusion must speedily become, as in fact it has done, intolerable, so as to render it unsafe to mention a star in that constellation by its annexed letter, without appending its right ascension and declination.†

Another inconvenience arising from the too great extent of some constellations, even to the astronomer who deals only with catalogues as a

\* Uluh Beigh, in his catalogue, designates *Hydra* as *Hydrus*.—B.

† Thus we have, in the nomenclature of the constellation *Argo*, three stars marked α, and seven marked A; six marked δ, and five marked D; and so on with several others.—B.

means of finding his objects, is, that the mention of the constellation ceases to be any guide to him as to whereabouts he shall look for the stars, when, as in *Draco*, *Ursa Minor*, or *Argo*, for instance, six, seven, or eight hours of right ascension are included in its limits. Every practical astronomer will, I think, agree that a system of constellations, in which—owing to their moderate extent and compact form, aided, as it might have been, by an orderly and methodical nomenclature—their places one among the other, and their times of coming on the meridian, should have been easy to remember, had such a one fortunately been adopted, would have been a very material assistance to him in his labour of observation.

3dly. Among the causes of confusion and error referable to this class must be mentioned those which have arisen from the carving of one constellation out of another, leaving an uncertainty in the boundary; such as that which occurs, for example, between *Libra* and *Scorpio*, or between *Lupus* and *Centaurus*: which last case is the more equivocal, by reason of the reduplication of the Greek letters which occur there. For example, in the debatable ground alluded to, there occur duplicates of the stars  $\iota$  and  $\tau$ , both which letters are found attached to stars situated in the unequivocal parts of both constellations. Indeed, the boundaries of the constellations, and even the constellations themselves, are in scarcely any two existing charts the same; a circumstance which alone must be considered decisive as to the necessity, at least, of some general understanding being at length come to respecting what shall be admitted and what rejected among the endless and capricious additions which successive editors have thought themselves called upon, or at least authorized, to make; as well as respecting the bounding outlines of those finally adopted: a thing by no means easy when the uncouth and extraordinary forms of some of them are considered.

As already observed, however, to the astronomer in a regular observatory, furnished with fixed instruments and accustomed to rely only on the catalogued places for the identification of his stars, the confusion and error originating in these defects, though often troublesome, are yet not such as to occasion very serious ground of complaint; at least in the northern hemisphere, where the catalogues are copious and less confused, and every considerable star, down to the fifth magnitude, perfectly well known. And already, in the southern, owing to the exertions made in this department in the observatories of the Cape, Madras, St. Helena, and Paramatta, the identification

of stars by their right ascension and polar distance may be regarded as so nearly complete, that it is probable very few of the fifth magnitude, and none of the fourth, remain uncatalogued; so that the confusion of nomenclature, which (especially in the constellations *Argo* and *Centaurus*) must have given the observers of these catalogues a vast deal of trouble, may now be considered as fairly subdued.

Nor shall I dwell very strongly on the difficulties thrown in the way of Nautical Astronomy by the existing system of constellations, and the defective state of even the best charts adapted for the use of seamen; because, though no doubt their acquisition of such a knowledge of the heavens as their purposes require might be very materially facilitated by a better system, and by charts bearing a closer resemblance to the actual heavens, and less encumbered with figures and letterpress, still, as their professional wants are limited to only a few, and those the most conspicuous stars, these are soon learned, and the ground of complaint, practically speaking, is here also not very serious.

There is, however, another and a very important class of observers, to whom the present system of constellations, and the actual state of the charts generally accessible, is a real and most serious grievance; I mean those who devote their attention to the physical departments of practical astronomy, such as require a perfect familiarity with the aspect of the heavens, as seen by the naked eye in the open air, whether for the purpose of pointing reflecting or other telescopes, not mounted meridionally or equatorially, to particular objects (such as double stars, nebulae, &c.), or for that of photometrical determinations, and for the investigation of variable and periodical stars. These last are subjects of great and growing interest, and there is, I think, no exaggeration in declaring it *impossible* to go fully into them under the present system of nomenclature and distribution. The constellations are so numerous, and of such excessive inequality in extent—their boundaries interlock and interlace one another in a manner so capricious, and so impossible to follow out by the eye among the stars, that, if only for this reason, the map has to be referred to at every instant. And when, as is the case with every map I have ever used, the *leading stars in the map are not those which catch the eye by their brightness in the heavens*, there arises a necessity of alternately poring over the maps by candle-light and rushing out into the darkness to compare the impression (usually a most erroneous one) left on



the memory by such inspection, with the reality as exhibited in the sky: a necessity not only fatal to all delicacy of vision, but actually injurious in a high degree to the organ itself; producing a painful irritation, when pursued some hours in succession, which continues long after the exciting cause has ceased. The loss of valuable time moreover, so arising, is deplorable, and the want of satisfactory agreement in the result of successive nights' observations, proves but too distinctly the influence of such unfavourable circumstances; while, in addition to these sources of annoyance, the mistakes arising from confusion of nomenclature have still to be guarded against with anxious vigilance. Considerable experience in this line enables me to say, that I know of no class of astronomical observations more painful, laborious, and unsatisfactory; while, on the other hand, with reformed constellations and charts adapted to the object in view, I am equally prepared to say that hardly any would prove more agreeable, easy, and popular. What is worst about the present system is, that all its difficulties and annoyances have to be encountered and undergone by every new observer, and by each, at every resumption of his observations after the lapse of any considerable interval of time; it being not merely familiarity with the heavens, but also with all the caprices, uncertainties, and errors of our artificial systems of representing them, which is required of him.

During my residence at the Cape of Good Hope I had proposed to myself, among other objects, to follow out in the southern hemisphere the system set on foot by my father in the northern,—of catalogues of comparative brightness, or some system equivalent; having for its object to place on record the relative apparent magnitudes of the stars at that epoch, with a view to the detection of changes, and to the correction of errors in the magnitudes already recorded, arising from lapse of time or original error. In so doing, my companion was BODE's *Atlas*, the only one within my knowledge in which the southern stars are laid down in sufficient numbers, and on a scale at all available for that purpose. It would be an ill acknowledgment of the assistance really derived from that great and valuable work, to criticise it for faults of detail, which its author had no means of detecting or correcting. Nevertheless, the embarrassment in its use proved so great as very forcibly to impress on my mind, both at the time and since, the absolute necessity of a total and systematic reformation of the whole series of southern constellations, as the only means of sparing to future observers who may be

desirous of prosecuting this interesting branch of research, the almost incredible loss of time and labour which I had myself to undergo. Having stated this, I shall decline entering further upon the somewhat invidious task of commenting more at length on the evils which it is proposed by such reformation to remedy, taking it for granted that the creation and perfecting of a really important branch of sidereal astronomy will be regarded as an *end* of such magnitude as to induce a favourable consideration of whatever *means* shall be found requisite to it; though involving some sacrifice of pardonable and even laudable prejudices in favour of a system consecrated by antiquity and usage. The necessity for such a reformation, having this especial object in view, I should observe, is not less unjust in the northern than in the southern hemisphere; perhaps even more so, as the number of conflicting authorities is greater, and the magnitudes of the stars have no doubt really undergone greater alterations since their first arrangement into constellations, in proportion to the time elapsed. The resistance, however, to change will here, of course, be much greater.

It will not be amiss, in order to a clear conception of the subject, to consider, first, what would be desirable in a system of sidereal nomenclature and arrangement (or of uranography), supposing the whole celestial globe a *tabula rasa*. It will then remain to determine how far the changes necessary to introduce such a system may now be practicable; what points should be insisted on; and what may be waved in favour of established usage. And first, as the most important points of all, must be considered the conditions that the new constellations, or regions into which the surface of the heavens is to be divided, should be of moderate extent—of compact and easily traceable figures—and should each of them include (in so far as such exist) natural groups of stars, or such as the eye can well insulate in the heavens, with some degree of decision, as prominent masses. It is true there are very large tracts in the heavens where no such groups occur, and where, in fact, no considerable stars are to be found. Such tracts are not to be neglected. New stars may appear in them, or the old ones may increase in brightness; and in such inquiries the proof of a negative is of importance. In such regions, at all events, the most conspicuous stars they afford must be our guides; only that here the conditions of form, extent, and general convenience in other respects become paramount to that of conspicuousness of grouping. It is, however, undeniable that there are plenty of fine and well-insulated

natural groups, which are arbitrarily broken in upon by the boundaries of the existing constellations, both in the northern and southern hemispheres; and this, when it occurs, is an evil to be remedied.

Another essential condition of a good system of uranography is, that the boundaries of its constellations, regions, or asterisms, should be so defined as to be liable to no possibility of variation in transferring them from chart to chart;—in other words, that their boundaries instead of being, as at present, curved lines of irregular form, traced by the eye, and often according to the convenience or caprice of the engraver, should consist of arcs of great circles, or of parallels to such circles; and, moreover, that their points of intersection should be fixed in right ascension and declination for a given epoch, so as to allow of being entered in a catalogue in the same manner as if they were stars, and brought up from epoch to epoch by the same tables of precession; in short, they might be regarded as imaginary stars, holding determinate places in the sphere. Such points once fixed on and catalogued in a small table apart, may be laid down in all new maps just as the stars are; and thus the identity of the boundaries of our asterisms is for ever secured, and all doubt as to which asterism any given star may belong effectually precluded. Moreover, these points (duly referred to the epoch of publication) might be laid down on any old map, and, being joined by red-ink lines, would render such map equally capable of being referred to for the new as for the old constellations.

One condition which these boundaries must satisfy is that of not passing through, or undistinguishably near to, any conspicuous star. Consistently with this condition, it might be supposed that not much difficulty would occur in including each remarkable natural group of stars in a compact pentagonal or hexagonal figure, fitting well with its neighbours. On the contrary, however, on trial, this is found extremely difficult to accomplish satisfactorily; and there is this objection to the use of polygonal figures, that cases will frequently arise among the smaller stars in which it would be difficult or impossible to decide, without the solution of a complicated problem of spherical trigonometry, on which side of their periphery a proposed star were situated. A different principle, and one which would secure advantages of great moment in other respects, is to include each asterism in a quadrilateral, bounded by arcs of meridians and parallels of declination for a given epoch, *i. e.* between given limits of right ascension and polar distance. The advant-

ages alluded to are: 1st, that in this system every star in a catalogue constructed for that epoch would at once, and without looking at a chart, be referred to its proper asterism; and in the case of a catalogue for any other epoch, in those few cases where a doubt might arise, it would only be needful to reduce the proposed star to the epoch of the map, by applying the precessions with their proper signs, in order to remove such doubt. 2dly, That supposing such a system to be generally introduced and to be adopted by astronomers in fixed observatories, every observer would soon become familiar with the limits in question (in which his memory might be assisted by artificial aids, such as memorial lines, &c.), and would at once, on the mention of a constellation, know the hours when it occupies his meridian, as well as the limits of altitude within which every star in it must be comprised — advantages which every practical astronomer would appreciate. This desirable end would be greatly facilitated if the meridional limits were fixed at precise hours, or at half or aliquot parts of hours, in right ascension; and the declinational ones at integer degrees, or pentads or decads of degrees, in polar distance. And although it be true that precession will in time carry away the asterismal boundaries from the existing meridians and parallels, yet this will hardly be felt as an inconvenience for a century at least from the present time; during which interval, if astronomy advance with its present rapidity, not only will that knowledge be attained and perfected which it is the object of this arrangement to facilitate, but, in all probability, such changes will have been introduced in the form and extent of catalogues, and in the sort of questions agitated among astronomers, that it will have become necessary on other grounds to go afresh into the subject.

But, in order to carry out this idea into practice, it is necessary that we possess a knowledge of what really *are* the natural groups of stars; i. e. those which catch the eye on a general view of any given region in the heavens; and, in regions where no such groups tolerably definite can be made out, what, at least, are the leading stars. Strange to say, this knowledge (to the extent required) is not to be gathered from any existing maps or catalogues; and, to obtain it, it is requisite to resort to direct observation of the stars themselves, made expressly with that object in view. Even in the northern hemisphere, and in the best maps which I have consulted, numerous cases occur of deviation from the real aspect of the heavens as it now exists; and in the southern such deviations are still more common, and

go to a much greater extent. To remedy this unsatisfactory state of things, and to afford data for the construction of celestial charts which shall really resemble the heavens, without which no reformation of the constellations of the nature contemplated can be of any use, I have devoted a large share of my attention, both during my residence at the Cape and since my return, to observations of the magnitudes of the stars, and to arrangements of stars visible at the same time and at proper altitudes, in their order of apparent lustre. Into the details of these observations, and of a system of photometrical measurements, having for their object the establishment of a numerical basis for a scale of magnitudes capable of satisfying, at least provisionally, the wants of astronomers, I shall not here enter. They will be found in the account of my southern observations preparing for publication. It will suffice to mention, that a part of the process in question consisted in breaking up the heavens into a system of triangles, having their angular points coincident with the most conspicuous and best situated stars each region afforded; examining *seriatim* the interior of each, with the naked eye (aided by the occasional use of an opera-glass held in the hand when needed) in the open air; and inserting every star seen, down to the sixth magnitude at least, in blank charts, previously prepared by pricking off the places of all stars, as far as the fifth inclusive, from the sheets of BODE's *Atlas*, taking care to preserve the relative proportions between the stars, so represented on paper, the same as between the originals actually under inspection in the heavens at the time; or, in other words, to render each triangle, so far as pencil and paper could make it, a faithful picture or transcript of its original in the heavens. From this description it will readily be apprehended that no star of the fifth magnitude and upwards can, by possibility, have escaped notice and registry in any part of the heavens where this process has been applied, and probably very few, if any, of the 5·6 and 6·5 magnitudes. The area, over which this net-work of triangles has been carried, includes the whole southern circumpolar region, as far as the tropic of Capricorn, with the exception of a very small portion about the southern part of *Sagittarius*, which an unexpected succession of cloudy weather prevented my completing, as calculated on during the last year of my residence at Feldhausen. This portion, however, though it escaped the rigorous analytical process of mapping, had previously been well reviewed. The interval between the tropic of Capricorn and the equinoctial has been also nearly covered, as well

as about three-fourths of the northern hemisphere; and, before the expiration of the present year, I have every reason to hope that the work will have been carried out to its completion, by filling in what remains of the inter-tropical zones and that small part of the northern extra-tropical region yet outstanding.

Thus much, without entering into further particulars, it has been necessary to state, in order to shew that we shall not be prevented by want of data from going fairly into the subject of uranographical reform, provided we are agreed on the principles, in other respects, on which it ought to be conducted. In so far as the arrangement and redistribution of the stars are concerned, there seems little room to apprehend any serious difference of opinion, at least so far as the southern circumpolar region is concerned; and, looking at the important object to be attained—an object which I firmly believe to be unattainable without some such systematic change, and the general convenience and certainty which it would carry into other branches of practical astronomy—I confess I am far from despairing of the adoption of a similar system throughout. There are many circumstances which conspire at the present time to render such a change practicable, by introducing the new or reformed system of constellations concurrently with the old, and *that* in such a manner as actually to facilitate its use by serving as a sort of index to its intricacies.

The contemplated extension of the catalogue of this Society, which, when executed, cannot fail to pass into the hands of every practical astronomer and become a general standard of reference, accompanied, as it is to be hoped it will be, with a table of synonyms and references to other catalogues, will of itself afford an almost infallible means of securing the gradual introduction of a well-considered system of the kind proposed, and powerfully tending to, but by no means necessitating, or even authoritatively recommending, the ultimate suppression of that in use. By a proper arrangement, this would entail hardly any addition to the labour and cost of such a work.

It becomes necessary, however, now to say something on the subject of nomenclature—a subject always difficult to deal with, and on this occasion peculiarly so, owing to the entire preoccupation of the ground and the multitude and interest of the associations, which, during a succession of ages, have linked themselves with the existing system. Such associations are entitled to all respect, and are not to be approached with levity. Strong

motives of direct utility may necessitate our disregard of them; but they should at least be sacred from a mere rage for nomenclature, the besetting sin of modern science. Nevertheless, I apprehend it will be found that, in introducing a new distribution of the stars in constellations, very extensive innovations will have to be made in the received nomenclature—so extensive, indeed, as to raise a doubt whether, for this purpose, any of the present names ought to be retained, and whether rather a strong and permanent line ought not to be drawn between the old and new systems, as the only mode of avoiding a confusion even worse than what we seek to obviate. For it will easily be apprehended that if, without a change of names, the boundaries of constellations be so materially altered as to include in the new ones conspicuous stars which formed no part of the old, and *vice versa*, the whole group of stars in each will have to be lettered and numbered anew; or else the existing system of lettering and numbering abandoned altogether, and a totally different principle introduced, for the naming of individual stars: which would be a pity, since the existing practice, though in some respects irregular, is yet, on the whole, extremely convenient.

In the southern constellations, however, no compunction of the kind can be rationally cherished, the constellations having the sanction of no such venerable antiquity; and the lettering of the stars in them being anomalous and perplexing, beyond all power of any thing short of entire rejection to remedy.

Laying aside, however, for the present these considerations, and assuming a complete freedom of choice, since no system of physical truth has to be embodied in uranographical nomenclature, we are not embarrassed in our choice of terms by a mass of thorny and technical considerations which beset the subject of scientific nomenclature in general, and have only to take care that whatever terms we adopt shall conform to the principles of distinctness, euphony, and general good taste.

The use of names is to enable us to speak and write of things without confusion, embarrassment, or offence, and “to make general propositions possible.”\* These ends, as regards the subject before us, will be materially forwarded by bearing in mind a few simple maxims.

\* WHEWELL: *Philosophy of Inductive Science*.

1. There should not be two constellations of the same name, or of names easily confounded when spoken or printed, either at length or contracted.

2. The name of each constellation should be a single word, of *good, classical Latin*, without epithet or adjunct attached. It should not be a long word (having usually to stand in a printed column of small breadth); and it should have a regularly formed genitive case, open to no cavil or question on the score of Latinity: and to these names, for obvious reasons, it would be desirable that astronomers of all nations should conform, *without translating them into their native languages*, as is the practice at present with the French and German astronomers.

3. Names of homely objects, or which recall uncouth forms or connect themselves with low, ludicrous, or even very familiar and modern associations, should be avoided. In this condemnation I feel strongly disposed to include all names of scientific apparatus, or instruments of art; all ignoble animals, reptiles, and insects; all flattering consecrations of arms, trophies, and relics; and all political or national allusions, as tending powerfully to obstruct their universal reception.

4. In the choice of names (not mythological, and referring to persons) general names should be preferred to particular: as, for instance, Rex, Regina, Heros, Miles, Nauta, Pietor, Sculptor, Nympha, Poeta, &c. Should the taste or the patriotism of engravers lead them to assign such immortality as their art, so exercised, may confer on the lineaments of their own national worthies, such names would afford ample room for the exercise of their powers; if, indeed, the inveterate practice of disfiguring celestial charts with pictures is to be perpetuated. It is to mythology, however, and to classical antiquity, that I should be disposed to retreat, as to a neutral ground, on which to escape from vexatious and interminable discussion on this head.

5. All idea of conforming the names of constellations to the configuration of their stars, as a *general principle*, must be abandoned as utterly impracticable. Nor will it be found easy to select names recalling by any fixed, memorial rule, the right ascension of the constellations, consistently with other and more imperative conditions.

As regards the nomenclature of individual stars, the present system of indicating the larger stars of each constellation by the attachment of Greek letters to the name of the constellation, with all its irregularities and misapplications, is yet so very convenient that it ought not to be abandoned if



possible to preserve it. This can, of course, be done wherever an entirely new name is adopted for the constellation, and in that case it can also be done *consistently*, so as to begin the alphabet with the largest stars, and proceed downwards in order, which is notoriously far from being the case in the present system. For example,  $\alpha$  and  $\beta$  *Sagittarii* are both stars of the fifth magnitude,  $\epsilon$  and  $\sigma$ , the largest stars in the constellation, being of the 2·3 and 3·2<sup>m</sup>.  $\alpha$  *Corvi* is also a comparatively small star 4·5<sup>m</sup>; while  $\gamma$ ,  $\beta$ ,  $\delta$ ,  $\epsilon$ , the leading ones, are of the respective magnitudes 3, 3, 3·4, 3·4. The order of the chief stars in *Scorpio* is  $\alpha$ ,  $\delta$ ,  $\theta$ ,  $\iota$ , the star  $\theta$  being set down in the Society's Catalogue as 5<sup>m</sup>, whereas it is at present fully 2·3<sup>m</sup>, and so on, in innumerable instances. But if the old name of a constellation be retained while the stars are altered, as already observed, the system of lettering must of necessity be abandoned. As this is a point of very material importance, it may be as well to elucidate by an example the sort of inconvenience which would arise in such a case from a contrary mode of procedure. Suppose it were resolved to take into the present constellation of the Cross the stars  $\gamma$  and  $\delta$  *Centauri*, and  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$  *Musæ Australis*, which lie near it and form, together with the irregular quadrilateral figure of the Cross, a well-defined and convenient natural group. Now, the order of the stars in that group stands thus:  $\alpha$ ,  $\beta$ ,  $\gamma$  *Crucis*,  $\gamma$  *Centauri*,  $\delta$  *Centauri*,  $\alpha$  *Musæ*,  $\beta$  *Musæ*,  $\delta$ ,  $\epsilon$ ,  $\theta$  *Crucis*,  $\delta$ ,  $\gamma$  *Musæ*. No inconvenience, of course, would arise from simply *disusing* the names  $\gamma$  and  $\delta$  *Centauri*, and  $\alpha$ ,  $\beta$ ,  $\gamma$ ,  $\delta$  *Musæ*; but if these stars are to be placed in the Cross, and lettered in order of magnitude,  $\delta$  and  $\epsilon$  *Crucis* must be dispossessed, and henceforward designated by the letters  $\theta$  and  $\iota$ , which are already occupied— $\theta$  indeed twice over. The order, therefore, must be sacrificed, which is a great evil. The Roman alphabet, it is true, remains open; and the substitution of Roman for Greek characters throughout might be suggested as a feature of the new nomenclature, which would relieve us of a considerable part of this difficulty, though by no means of the whole; as in a great many constellations whose names it might be considered desirable to retain, both Roman and Greek characters are in use. On the other hand, if we consent to change the name of the constellation to one equivalent, such as, for instance, *Labarum*,\* the ancient standard of our

\* The vision of CONSTANTINE before his battle with LICINIUS, of the Cross, with the superscription *TOYTO VINCIT* (By this conquer) is well known. Whatever credit we attach to the vision,

faith—the sacred emblem\* under which CONSTANTINE fought and conquered—every difficulty would vanish. The constellation, in common language, would retain its name; every venerable and poetical association would be saved, and even something superadded in a reference by allusion to the most important event which has occurred since the promulgation of our religion, viz. its final and decisive establishment as the religion of the Roman Empire.

It has been suggested to me by one whose authority in matters of nomenclature has been recently vindicated by a most masterly synopsis of the general principles of terminology,† that it would be proper in all cases to retain the present names of constellations, substituting throughout Roman letters for Greek, and attaching to the name the distinguishing epithet *Reformati*, or *Reformata*, as the gender might require. The idea deserves consideration; but the case, in which Roman as well as Greek characters are already in use, would prevent its general applicability; the possibility of any memorial rule for the right ascensions would be done away with, and an epithet introduced which might, and probably would, be often omitted, to the creation of dreadful confusion.

Independently, however, of the practice of numbering and lettering the stars, it has been customary to designate particular stars by individual or proper names. Many of these are retained in common use, though the major part, being Arabic words of difficult pronunciation, and uncertain spelling, have (very properly) become exploded. They are used profusely by PIAZZI, to the great annoyance of those who have occasion to refer to his catalogue; whence, however, a few of the most manageable might, if considered advisable, be rescued from oblivion. The practice itself I cannot help wishing to see extended to all stars of at least the first, second, and third magnitudes, of which astronomers have often occasion to speak and write familiarly.

It might not be unworthy of consideration whether, in the event of

the adoption of the cross, under the especially sacred and mysterious epithet *Liberum*, as the standard of the empire, is historically certain.

“*Christus purpureum germani textus in auro,  
Signabat Liberum; clypeorum insignia Christus  
Scripserat; ardebat summis Crux addita cristis.*”

*PRUDENT. in Symmachum, l. ii. 464, 486.*

\* See GIBBON, iii. 257.

† WHEWELL, *Philosophy of the Inductive Sciences. Aphorisms on Terminology.*

generic names being given to constellations, particular ones of the same kind might not be conveniently assigned to their constituent stars; as, for instance, if the constellation were *Nympha*, leading stars might be called by such names as *Acantha*, *Calisto*, *Egeria*, *Myrrha*, &c., the initial letters following in order of right ascension: so under the constellation *Nauta*, or *Navis*, we might restore the *Argonauts*, or press into our service the names of *Ulysses*, *Palinurus*, *Hanno*, *Pytheas* (the first discoverer of Britain); or even stretch a little forward into more modern times to find room for *Columbus*, *Vasco*, *Diaz*, and one or two other worthies of southern nautical discovery, whose constellations we reluctantly dispossess.

Another idea, possibly not unworthy to be considered, is to name the stars in chronological order, commencing at 0<sup>h</sup> with the 12th century *a.c.*, and terminating at the completion of the circle with the 12th century *a.d.*; giving to remarkable stars, in each hour, the names of worthies of the corresponding century. The Cross, at the twelfth hour, would aptly mark the bisecting epoch. The names to be selected must, of course, be those best adapted to the purpose in view, without nice regard to the merit of individuals. Scriptural names too, for very obvious reasons, should in such an arrangement be avoided.

It has also been suggested to me that ancient cities, not too familiar, might be taken as names of constellations, as *Balbec*, *Palmyra*, *Memphis*, &c. and their worthies as those of their stars. Possibly a few such names might acquire currency, though it would hardly be practicable to make this the basis of a system.

These, however, and an infinity of other suggestions, are, perhaps, at present premature. Nevertheless, since, if anything is to be done it must be done speedily, it is not amiss to be prepared with something definite and capable of being brought under discussion. It is rather with a view to draw attention to the subject, and, perhaps, to procure some better suggestions, than as having myself any system to advocate as very much preferable to any other, that I have introduced the subject of nomenclature at all; and that, rather as pointing out what is to be avoided as objectionable in any system, than as offering a decisive opinion as to what should be adopted.

Annexed to this communication, is a rough sketch of the stars of a southern circumpolar chart, by way of illustrating the principle of arrangement proposed to be carried out. No star not clearly visible to the naked

eye, as tolerably conspicuous, is admitted; and the marks representing the stars are intended to be in proportion to their apparent relative lustre. The Pole is occupied by a circular constellation, containing within itself stars, by whose allineation in a tolerably clear night the south pole may be found. The meridional and declinational boundaries of the other proposed asterisms are marked by dark lines; the existing, by faint ones. The proposed asterisms are purposely left un-named, the epithets *Regio Crucis*, &c. written in them being merely provisional and temporary. The subdivision is that which has been pitched upon, after a good deal of deliberation and discussion, between Mr. BAILY and myself. The groups are on the whole, I believe, the best which can be made out; and having been submitted to the consideration of Mr. JOHNSON (now the present Radcliffe Observer at Oxford), whose labours in southern astronomy at St. Helena give great weight to his opinion, have received his approbation, as well as given rise to some suggestions on his part, which have been embodied in the sketch. The course of the Milky Way is purposely omitted; but the two NUBECULÆ are inserted in their real places, which, by a strange want of precision in existing charts and globes, fall, as will be observed, in great measure out of the limits of the constellations named *Nubecula Major* and *Minor*, leaving the areas, occupied by both those constellations, nearly blank.

In Regione Poli I. 2 Stars.						In Regione IV. 12 Stars.					
R. 1830.	Decl. 1830. South.	Mag. H.	No. A. S. C.	Star.	Mag. A. S. C.	R. 1830.	Decl. 1830. South.	Mag. H.	No. A. S. C.	Star.	Mag. A. S. C.
0 17	78 15	3	27	$\alpha$ Hydri .....	3	2 34	40 35	5.4	288	$\epsilon$ Eridani ....	4.5
8 23	76 23	5.4	1036	$\alpha$ Chamel. ....	5	2 42	33 8	5.4	306	$\beta$ Fornacis ....	5
10 44	79 39	5.4	1290	$\beta$ Chamel. ....	5	2 52	40 59	3.4	325	$\delta$ Eridani ....	4.5
12 2	78 22	5.4	1411	$\alpha$ Chamel. ....	5	2 55	24 18	4.5	336	E Eridani ....	4
14 27	78 19	5.4	1649	$\alpha$ Apodis....(1)	4.5	3 5	29 40	4.5	353	12 Eridani ....	3.4
15 59	78 15	5.4	..	{ $\delta$ = 24 + 25 Apod. Bore ....(2)	..	3 12	22 23	4	363	16 Eridani ....	3.4
16 8	78 30	5.4	1863	$\gamma$ Apodis .....	5	3 13	43 44	5.4	388	$\epsilon$ Eridani ....	4
21 23	78 7	4	..	{ $\gamma$ = 66 + 67. (3)	..	3 26	22 12	4.5	386	19 <sup>th</sup> Eridani ....	4
22 28	82 15	4.5	2700	{ Octantis Bore $\delta$ Octantis .....	5	3 37	37 51	5.4	411	$\delta$ Eridani ....	5
In Regione II. 13 Stars.						3 40	23 45	4.5	421	m <sup>1</sup> Eridani ....	5
0 1	46 41	4.5	5	$\alpha$ Phœnicis ....	4	3 42	38 9	5.4	426	$\epsilon$ Eridani .. (7)	5
0 13	44 37	5.4	30	$\alpha$ Phœnicis ....	5	3 43	36 43	5.4	428	$\eta$ Eridani ....	5
0 18	43 14	3.2	31	$\alpha$ Phœnicis ....	2	In Regione V. 5 Stars.					
0 33	47 1	5.4	63	$\mu$ Phœnicis ....	5	3 42	65 21	4.5	425	$\delta$ Reticuli ....	4
0 50	30 17	4.5	100	$\alpha$ App. Sculp..	5	3 50	74 46	4.3	439	$\gamma$ Hydri .....	3
0 59	47 38	4	112	$\delta$ Phœnicis ....	3.4	4 12	62 54	4	485	$\alpha$ Reticuli ....	3.4
1 1	56 9	4	123	$\zeta$ Phœnicis ....	5	5 32	62 36	4.5	697	$\delta$ Doradus ....	4
1 21	44 11	4	161	$\gamma$ Phœnicis ....	3	5 44	65 48	5.4	730	$\beta$ Doradus ....	5
1 24	49 57	4	167	$\beta$ Phœnicis ....	4	In Regione VI. 10 Stars.					
1 40	52 28	4	210	$\chi$ Eridani ....	4	4 8	42 43	4.5	474	$\alpha$ Horologii ....	5
1 57	30 7	5.4	..	{ $\gamma$ Mach. Elec. Bore, 79	6	4 11	34 13	4.5	482	X Eridani ....	3.4
2 10	52 18	4	241	$\phi$ Eridani ....	4	4 12	51 55	5.4	483	$\gamma$ Doradus ....	4
2 21	48 28	5.4	256	$\alpha$ Eridani ....	4.5	4 29	30 54	5.4	534	$\epsilon$ Eridani .....	3
In Regione III. 7 Stars.						4 30	55 24	4.3	538	$\alpha$ Doradus ....	3
0 11	65 54	5.4	21	$\zeta$ Tucanæ	4	5 25	35 36	4.5	672	$\alpha$ Columbe ....	4
0 24	63 54	4	{ 44 45	$\beta^1 + \beta^2$ Tucanæ seen as one star (4)		5 33	34 10	3	699	$\alpha$ Columbe ....	2
0 36	58 24	5.4	69	$\beta$ Phœnicis ....	5	5 44	51 9	4.5	..	$\beta$ Plutei, B. 37	6
1 31	58 6	1	182	$\alpha$ Eridani .. (5)	1	5 45	35 50	3.4	732	$\beta$ Columbe ....	3
1 53	62 24	3.4	219	$\alpha$ Hydri .....	3	5 55	42 50	4.5	..	$\gamma$ Plutei, B. 47	5
2 19	69 26	4.5	254	$\beta$ Hydri .....	4						
2 37	69 0	4.5	{ 295 296	{ $\gamma$ Hydri .. (6) $\delta$ Hydri	{ 5 5						

In Regione VII. 3 Stars.						In Regione XI. 4 Stars.					
R. 1830.	Decl. 1830. South.	Mag. H.	No. A. S. C.	Star.	Mag. A. S. C.	R. 1830.	Decl. 1830. South.	Mag. H.	No. A. S. C.	Star.	Mag. A. S. C.
<sup>h</sup> 4 <sup>m</sup> 58	22° 36'	4.3	597	α Leporis.....	4	<sup>h</sup> 7 <sup>m</sup> 32	26° 26'	4	..	B. 171 Argus (9)	3
5 21	20 54	3.4	659	β Leporis.....	4	7 37	28 33	5.4	954	3 Argus .. (10)	5
5 37	22 31	4.3	705	γ Leporis.....	4	7 42	24 26	4.3	961	4 Argus .....	4
						8 0	23 49	3.4	995	15 Argus .. (11)	3.4
In Regione VIII. 5 Stars.						In Regione XII. 5 Stars.					
6 46	61 46	4.3	856	α Plutei .....	4	8 35	46 3	5.4	1065	δ Arg. Vel. ....	5
7 10	70 13	4.5	901	γ Pisc. Vol.....	5	8 37	32 35	5.4	1070	α Pixidis .....	4.5
7 17	67 39	5.4	914	β Pisc. Vol.....	5	8 40	45 25	5.4	1078	α Arg. Vel. ....	5
7 44	72 11	5.4	..	ζ Pisc. Vol. B. 7	6	9 2	42 45	3.2	1114	λ Argus .... (12)	3.4
8 7	68 2	5.4	1009	ι Pisc. Vol. ....	5	9 24	56 17	4.5	1159	ψ Argus .....	4.5
In Regione IX. 11 Stars.						In Regione XIII. 21 Stars.					
6 20	52 36	0.1	807	Canopus ....	1	8 19	58 58	2	1032	ι Argus .....	2
6 33	43 3	4.3	829	ν Argus .....	3	8 24	65 34	5.4	1040	β Pisc. Vol.....	5
6 46	50 25	3.4	852	κ Argus .....	4	8 35	52 10	4.5	1067	σ Argus .....	4
7 11	36 48	3	903	π Argus .....	3.4	8 40	54 5	2.3	1077	2 Argus .....	3
7 24	42 58	4.3	928	ε Argus .....	4	9 0	65 43	5.4	1110	α Pisc. Vol.....	5
7 35	38 9	4.5	..	B. 186 Argus ...	6	9 6	58 17	4.5	1123	α Arg. Car.....	5
7 39	37 34	4.5	957	c Argus Pup. ...	4	9 7	61 37	5.1	1124	i Arg. Car.....	5
7 46	40 8	4	..	{ α Arg. Pup. }	5	9 11	69 1	2	1133	β Argus .....	2
7 52	52 32	4.5	982	{ Bode 244 } ..	3	9 13	58 34	3.2	1137	γ Argus .....	2
7 58	39 32	3.2	990	ζ Argus .....	3	9 17	54 17	3	1144	κ Argus .....	3
8 4	46 50	2	1003	γ <sup>2</sup> Argus .....	2	9 26	56 17	4.3	1160	N Argus .....	5
In Regione X. 8 Stars.						9 41	61 44	4.5	1182	l Argus Car. ..	5
6 14	30 0	4.3	791	ζ Canis .....	3	9 43	64 17	3.4	1186	ν Argus .....	3.4
6 16	33 21	4	798	λ Canis .....	4	9 51	53 46	4.5	1196	2 Argus .....	4
6 43	32 19	4	848	κ <sup>2</sup> Canis .....	4	10 10	69 12	4.3	1225	κ Argus .....	4.5
6 47	23 59	4.5	857	α Canis .....	4	10 11	60 29	4.3	1229	q Argus .....	5
6 52	28 45	2.1	869	ι Canis .....	2.3	10 21	73 11	5.4	1247	l Arg. Car. (13)	5
6 56	23 35	4.3	877	α <sup>2</sup> Canis .....	4	10 26	60 49	4	1258	{ e (Bode) Car. }	4
7 1	26 8	2.3	883	β Canis .... (8)	3.4	10 37	63 30	3.4	1276	{ p Car. A. S. C. }	2.3
7 17	28 59	3	915	8 Canis .....	3	10 39	58 48	1.0	1281	κ Argus .....	2
						10 47	57 57	4.5	1294	u Arg. Car.....	5

In Regione XIV. 3 Stars.						In Regione XVII. 6 Stars.						
R. 1830.	Decl. 1830. South.	Mag. H.	No. A.S.C.	Star.	Mag. A.S.C.	R. 1830.	Decl. 1830. South.	Mag. H.	No. A.S.C.	Star.	Mag. A.S.C.	
<sup>h</sup> 10 <sup>m</sup> 8	41° 17'	5.4	1223	<i>γ</i> Arg. Vel. ....	4	<sup>h</sup> 13 <sup>m</sup> 10	22° 16'	3.4	1524	<i>γ</i> Hydræ Con... 4.5		
10 30	47 21	5.4	1264	<i>p</i> Arg. Vel. ....	5	13 11	35 49	3.4	1527	<i>ι</i> Centauri .... 3		
10 39	48 31	3	1283	<i>π</i> Argus .....	3	13 57	25 52	4.3	1603	<i>π</i> Hydræ ..... 4.5		
						13 57	35 32	3.2	1604	<i>θ</i> Centauri .... 2		
						14 32	37 3	4.5	..	<i>δ</i> Cent. B. 314 5		
						14 33	34 26	5.4	1661	<i>ε</i> Centauri .... 5		
In Regione XV. 16 Stars.						In Regione XVIII. 10 Stars.						
11 28	62 5	4.3	1360	<i>α</i> Centauri .... 4		13 52	59 33	1.2	1596	<i>β</i> Centauri .... 1		
11 38	65 49	4.5	..	<i>B. 48 Cent. .... 6</i>		14 9	55 36	5.4	..	<i>V Cent. B. 265 .. 6</i>		
12 0	49 47	3	1395	<i>β</i> Centauri .... 3		14 10	57 41	5.4	..	<i>Y Cent. B. 272 .. 6</i>		
12 3	51 25	5.4	1401	<i>ζ</i> Centauri .... 4		14 28	60 8	1.0	1654	<i>α</i> Centauri (15) 1		
12 6	57 48	4.3	1406	<i>δ</i> Crucis .....	3	14 29	64 13	4.3	1655	<i>α</i> Circini ..... 4		
12 12	59 28	5.4	1421	<i>ι</i> Crucis .....	4	15 3	68 2	3.4	1722	<i>γ</i> Trianguli .... 4.5		
12 17	62 9	1.2	1427	<i>α</i> Crucis .....	1	15 4	58 9	5.4	1724	<i>β</i> Circini ..... 3		
12 19	49 17	5.4	1431	<i>ε</i> Centauri .... 5		15 10	58 42	5.4	..	<i>γ</i> Circini B. 18.. 6		
12 22	56 9	2.1	1439	<i>γ</i> Crucis .....	2.3	15 40	62 53	3.4	1798	<i>β</i> Trianguli .... 3		
12 22	71 12	5.4	1441	<i>γ</i> Muscæ .....	4	16 31	68 42	2.3	1906	<i>α</i> Trianguli .... 2		
12 27	68 12	3.4	1453	<i>α</i> Muscæ .....	4							
12 32	48 1	3.2	1463	<i>γ</i> Centauri .... 3								
12 36	67 11	4.3	1471	<i>β</i> Muscæ .....	4							
12 38	58 45	1.2	1473	<i>β</i> Crucis .....	2							
12 45	56 15	5.4	1485	<i>α</i> Crucis .. (14) 5								
12 51	70 38	5.4	1494	<i>β</i> Muscæ .....	4							
In Regione XVI. 7 Stars.						In Regione XIX. 28 Stars.						
11 25	30 55	4	1356	<i>ξ</i> Hydræ ..... 4		13 29	52 36	3	1554	<i>α</i> Centauri .... 3		
11 44	32 58	4.5	1378	<i>β</i> Hyd. Cræ. .... 4		13 39	40 50	4	1570	<i>ι</i> Centauri .... 4		
12 0	23 47	5.4	1396	<i>α</i> Corvi .....	4.5	13 39	41 37	4	1572	<i>π</i> Centauri .... 4		
12 1	21 40	3.4	1398	<i>α</i> Corvi .....	4	13 45	46 27	3	1582	<i>ζ</i> Centauri .... 3		
12 2	16 36	3	1408	<i>γ</i> Corvi .....	3	13 48	41 16	4.5	1588	<i>β</i> Centauri .... 5		
12 21	15 34	3.4	1437	<i>β</i> Corvi .....	3	13 48	43 58	4.5	1589	<i>α</i> Centauri .... 5		
12 25	22 27	3	1448	<i>β</i> Corvi .....	2.3	14 9	45 16	4.5	1622	<i>ι</i> Lupi ? .. (16) 4.5		
						14 25	41 24	3	1644	<i>β</i> Centauri .... 3		
						14 27	48 41	5.4	1648	<i>ε</i> Lupi .. .....	5	
						14 31	46 39	3	1657	<i>α</i> Lupi .....	3	
						14 47	42 26	3.4	1689	<i>β</i> Lupi .....	3.4	
						14 48	41 25	4.3	1693	<i>κ</i> (α) Cent. .. (17) 3		

In Regione XIX. Continued.						In Regione XX. (Scorpii et Sagittarii). Continued.					
R. 1830.	Decl. 1830. South.	Mag. H.	No. A.S.C.	Star.	Mag. A.S.C.	R. 1830.	Decl. 1830. South.	Mag. H.	No. A.S.C.	Star.	Mag. A.S.C.
13 <sup>h</sup> 54 <sup>m</sup>	46° 23'	4.5	1704	κ Lupi.....	5	17 <sup>h</sup> 0 <sup>m</sup>	43° 0'	4.3	1960	γ Scorpii ....	4
14 57	44 37	5.4	1713	λ Lupi.....	5	12 11	20 55	5.4	1981	ε Ophiuchi ....	4.5
15 0	51 27	4.5	1717	ζ Lupi.....	4	12 12	24 49	4.3	1986	θ Ophiuchi ....	3.4
15 0	48 5	4.5	1718	κ Lupi.....	5	12 16	24 1	5.4	1993	δ Ophiuchi ....	5.6
15 2	47 14	4.5	1728	μ Lupi.....	5	12 17	29 42	4.5	1994	δ Ophiuchi ....	5
15 10	40 1	4	1734	η Lupi.....	5	12 19	37 9	3.4	2002	ν Scorpii ..... 3.4	
15 10	47 18	4	1735	ι Lupi.....	5	12 21	23 49	5.4	2005	51 = ε <sup>2</sup> Ophiuchi.	5
15 24	44 23	4.5	..	δ Lupi, B. 63..	6	12 22	36 58	2.1	2007	λ Scorpii ..... 3	
15 24	40 35	3.4	1760	z Lupi.....	4	12 25	42 53	2.3	2012	θ Scorpii ..... 5	
15 27	42 0	5.4	1768	ι Lupi.....	5	12 31	38 56	3	2027	α Scorpii ..... 3	
15 30	44 5	4.5	1779	g Lupi? B.63(18)	5	12 36	40 3	4.3	2037	ι Scorpii ..... 4.5	
15 49	37 54	4.5	1821	ι Lupi.....	5	12 38	36 59	4.3	2043	γ Tubi.....	4
15 55	44 42	5.4	1831	η Normæ ....	5	12 54	29 35	4.5	2076	γ <sup>2</sup> Sagittarii ...	5
16 2	49 44	4.5	1862	γ <sup>2</sup> Normæ ....	5	12 55	30 25	4.3	2079	γ <sup>2</sup> Sagittarii ...	4
16 15	47 9	4.5	..	ι Normæ, B. 47	6	18 4	21 6	4	2096	μ <sup>1</sup> Sagittarii ...	3.4
16 29	49 18	5.4	..	φ Normæ, B. 68	6	18 6	36 48	3.4	2101	β Tubi.....	4
In Regione XX. (Scorpii et Sagittarii). 44 Stars.						18 10	29 53	3	2105	η Sagittarii ...	3.4
15 11	35 38	4	1738	φ <sup>1</sup> Lupi.....	5	18 13	34 27	2.3	2110	ι Sagittarii ...	3
15 27	22 34	5.4	1768	39 Libræ ....	5	18 17	25 30	3.4	2122	λ Sagittarii ...	4
15 28	29 13	4	1774	40 Libræ ....	4.5	18 35	27 9	4	2163	φ Sagittarii ...	4.5
15 46	28 43	4.5	1816	ε Scorpii.....	4	18 45	26 30	3.2	2180	ε Sagittarii ...	3
15 49	25 37	3.4	1818	κ Scorpii.....	3.4	18 48	21 19	4.5	2187	ξ <sup>2</sup> Sagittarii ...	5
15 50	22 8	3	1823	η Scorpii ..... 3		18 52	30 2	3	2196	ζ Sagittarii ...	3.4
15 56	19 20	3	1836	β Scorpii.....	2	18 54	21 59	4	2205	ι Sagittarii ...	4.5
16 11	25 11	4.3	1872	ε Scorpii.....	4	18 56	27 55	4	2208	1 Sagittarii ...	4
16 19	26 3	1.2	1885	Antares ....	1	19 0	21 17	4.3	2220	κ Sagittarii ...	4.5
16 25	27 51	3.4	1900	1 Scorpii.....	3.4	20 36	25 52	4.5	2445	ψ Capricorni ..	4.5
16 39	33 59	3.2	1915	ι Scorpii.....	3	20 42	27 33	4.5	2464	α Capricorni ..	5.6
16 40	37 45	3.4	1919	μ <sup>1</sup> Scorpii.....	3.4	20 57	25 41	5.4	2504	A Capricorni ...	5.6
16 41	37 43	3.4	1921	μ <sup>2</sup> Scorpii.....	4	21 17	23 8	4.5	2543	ζ Capricorni ..	4
16 43	42 3	4	..	ζ <sup>2</sup> Scorpii, B. 153	3						



In Regione XXI. 12 Stars.						In Regione XXIII. 4 Stars.					
R. 1830.	Decl. 1830. South.	Mag. H.	A.S.C.	Star.	Mag. A.S.C.	R. 1830.	Decl. 1830. South.	Mag. H.	A.S.C.	Star.	Mag. A.S.C.
16 <sup>h</sup> 45 <sup>m</sup>	55° 43'	4	1929	ζ Arw .....	3.4	21 <sup>h</sup> 35 <sup>m</sup>	33° 48'	5.4	2577	ι Pisc. Austr. ...	4.5
16 46	52 53	5.4	1933	ι Arw .....	4.5	22 22	33 13	4.5	2689	δ Pisc. Austr. ...	4
17 11	56 12	3.4	1983	γ Arw .....	3	22 31	27 56	4.5	2705	18 Pisc. Austr. ...	4
17 11	55 21	4.3	1984	β Arw .....	3	22 48	30 31	1.2	2741	FONALHAUT.	1
17 16	60 32	4	1992	λ Arw .....	4	In Regione XXIV. 13 Stars.					
17 19	49 44	3.4	2001	μ Arw .....	3						
17 29	64 38	4	2025	α Pavonis ....	5	21 44	38 10	4.3	2598	γ Gruis .....	4
17 53	50 5	4	2073	θ Arw .....	4	21 56	40 21	5.4	..	λ Gruis, B. 20..	5
18 14	46 3	4.5	2115	α Tubi .....	4.5	21 57	47 47	2.1	2623	α Gruis .....	2
18 23	71 33	5.4	2138	ζ Pavonis ....	4	22 7	61 6	3	2651	α Tucanæ ....	3
18 36	62 22	4	2166	λ Pavonis ....	5	22 15	65 49	5.4	2670	δ Tucanæ ....	5
18 39	67 26	4	..	α Pavonis, B. 29	6	22 19	44 22	5.4	2681	β Gruis .....	4
In Regione XXII. 9 Stars.						22 20	44 37	5.4	2683	γ Gruis .....	5
						22 32	47 46	2.3	2708	δ Gruis .....	3
						22 35	54 23	5.4	2717	α Gruis .....	5
						22 38	52 12	4.5	2721	ι Gruis .....	4
						22 51	53 40	5.4	2745	ζ Gruis .....	5
						22 57	44 26	5.4	2758	ι Gruis .....	5
						23 1	46 10	4.5	2765	α Gruis .....	5
						23 7	59 10	4.5	2774	γ Tucanæ ....	4
						23 24	38 45	4.5	..	δ Sculptoris, B. 10	5
						23 26	43 33	5.4	2813	ι Phœnicis ....	5
19 41	73 20	4.5	2325	ι Pavonis ....	4	23 30	47 35	5.4	2821	θ Phœnicis ....	5
19 52	66 36	4	2351	δ Pavonis ....	4	23 51	66 31	5.4	2867	ι Tucanæ ....	5
20 12	57 16	2.3	2398	α Pavonis ....	2						
20 26	47 53	4.3	2417	α Indi .....	3						
20 30	66 48	4	2426	β Pavonis ....	3						
20 32	52 31	5.4	..	α Indi, B. 16 ..	6						
20 41	59 5	4.5	2463	β Indi .....	4						
21 8	54 9	..	..	δ Indi, B. 39 ..	6						
21 12	66 8	5.4	2526	γ Pavonis ....	3						

Temporary Names of the Regions referred to in the above Catalogue.\*

Regio.	Regio.	Regio.
1. Poli Australis.	9. Navis Reformatæ.	12. Centauri Ref.
2. Phœnicis Reformatæ.	10. Canis Ref.	13. Trianguli Ref.
3. Hydri Reformati.	11. Pictoris ?	19. Lupi Ref.
4. Eridani Ref.	12. Pixidis Ref.	20. Scorpii et Sagittarii Ref.
5. Doradus Ref.	13. Jasonis ?	21. Aræ Ref.
6. Columbe Ref.	14. Antilæ Ref.	22. Pavonis Ref.
7. Leporis Ref.	15. Labari.	23. Zeburæ ?
8. Volantis ?	16. Corvi Ref.	24. Gruis Ref.

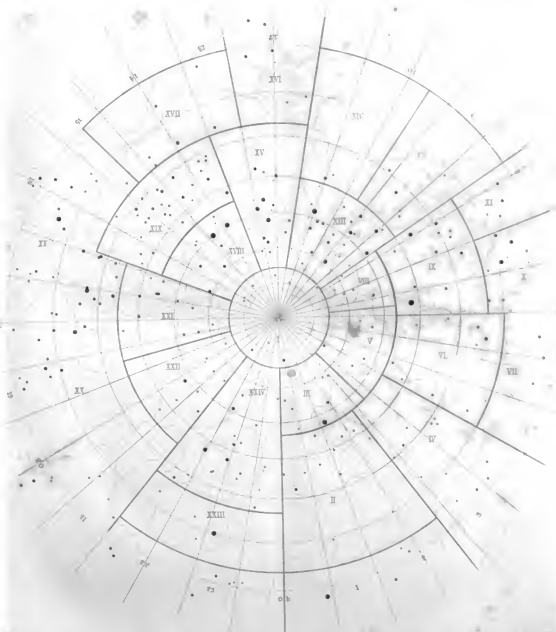
\* See Note (19).

## NOTES.

- (1). Called by mistake  $\alpha$  in A. S. C.
- (2). The two stars 24 + 25 seen as one by the naked eye.
- (3). 66 + 67, *Octantis* seen as one star by the naked eye.
- (4).  $\beta$  *Tucanæ* (? *Tucani*) is a fine double star, seen by the naked eye as one star 4 m.
- (5).  $\alpha$  *Eridani* is commonly called *Achernar*, but the true *Achernar* "*ultima Fluvii*," is  $\epsilon$  *Eridani*.
- (6).  $\epsilon$  and  $\xi$  *Hydri*, which are entered as two distinct stars, Nos. 295 and 296 in the A. S. C. are one and the same. It is not a double star.
- (7). This star is marked  $f^2$  in BOND's Catalogue, No. 207;  $h$ ,  $m^1$ , and  $y$ , are Nos. 193, 203, 209 in that Catalogue, and are lettered as in A. S. C.
- (8). This star is laid down five or six minutes of time too much eastward in the charts of Messrs. DAWSON and HUSSEY.
- (9). This star is called  $\alpha$  by BOND, but there is another  $\alpha$  *Argus*. BOND also ascribes to it the name Markab. Markab is a name of  $\alpha$  *Pegasi*.\*
- (10). BOND, in his map and catalogue, designates this star by  $\gamma$ ; but the star 852 A. S. C. is also so designated.
- (11). Called by BOND, both in map and catalogue,  $\epsilon$ ; but there is also another  $\epsilon$  *Argus*.
- (12). There is another candidate for the name  $\lambda$  *Argus*, viz. the star 58 BOND *Canis Minoris*, of the fifth magnitude. Vide BOND's Catalogue.
- (13). In A. S. C. the declination of this  $\star$  is  $-73\ 10\ 92.00$ , which is, of course, an erratum.
- (14). This star is marked O in BOND's maps and catalogue.
- (15). The two stars of  $\alpha$  *Centauri* seen as one by the naked eye. Both are fully of the first magnitude; the smaller is, however, set down as 4 m in A. S. C.
- (16). This is one of the lettered stars common to *Lupus* and *Centaurus*. The true  $\epsilon$  *Lupi* is 1766 A. S. C., which see farther on.
- (17). Lettered  $\chi$  in A. S. C. In BOND's Catalogue, No. 334 and maps, it is called  $\alpha$ , which agrees better with its magnitude.
- (18). Called  $\gamma$  *Lupi* in A. S. C. But in BOND's Catalogue the star  $\epsilon$  *Lupi* 5 m has the letter  $\gamma$ , and no letter is attached to this star.
- (19). In the original chart submitted to the inspection of the Society these names were written in their respective compartments, with the exception of the name *Labari*, in region 15, which has since been altered from "*Crucis*," as it stood originally; and *Zebra*? in region 23, which is altered from "*Notius*."

\* *Pegasus* is unlucky in equivokes of this kind.  $\beta$  *Pegasi* bears the name Scheat, which is also given to  $\delta$  *Aquarii* (B. 247).  $\gamma$  *Pegasi*, if referred to as *Algenib*, is liable to be confounded with  $\alpha$  *Persei*, which is also so named, while  $\delta$  *Pegasi* is identical with  $\alpha$  *Andromedæ*. Thus also there are two *Marfies* ( $\alpha$  *Herculis* and  $\lambda$  *Ophiuchi*), &c.





MS. Entries in the Catalogue

In Region 22, Vol. 2, the list is read by 22  
In Region 22, strike out 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164, 165, 166, 167, 168, 169, 170, 171, 172, 173, 174, 175, 176, 177, 178, 179, 180, 181, 182, 183, 184, 185, 186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198, 199, 200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217, 218, 219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232, 233, 234, 235, 236, 237, 238, 239, 240, 241, 242, 243, 244, 245, 246, 247, 248, 249, 250, 251, 252, 253, 254, 255, 256, 257, 258, 259, 260, 261, 262, 263, 264, 265, 266, 267, 268, 269, 270, 271, 272, 273, 274, 275, 276, 277, 278, 279, 280, 281, 282, 283, 284, 285, 286, 287, 288, 289, 290, 291, 292, 293, 294, 295, 296, 297, 298, 299, 300, 301, 302, 303, 304, 305, 306, 307, 308, 309, 310, 311, 312, 313, 314, 315, 316, 317, 318, 319, 320, 321, 322, 323, 324, 325, 326, 327, 328, 329, 330, 331, 332, 333, 334, 335, 336, 337, 338, 339, 340, 341, 342, 343, 344, 345, 346, 347, 348, 349, 350, 351, 352, 353, 354, 355, 356, 357, 358, 359, 360, 361, 362, 363, 364, 365, 366, 367, 368, 369, 370, 371, 372, 373, 374, 375, 376, 377, 378, 379, 380, 381, 382, 383, 384, 385, 386, 387, 388, 389, 390, 391, 392, 393, 394, 395, 396, 397, 398, 399, 400, 401, 402, 403, 404, 405, 406, 407, 408, 409, 410, 411, 412, 413, 414, 415, 416, 417, 418, 419, 420, 421, 422, 423, 424, 425, 426, 427, 428, 429, 430, 431, 432, 433, 434, 435, 436, 437, 438, 439, 440, 441, 442, 443, 444, 445, 446, 447, 448, 449, 450, 451, 452, 453, 454, 455, 456, 457, 458, 459, 460, 461, 462, 463, 464, 465, 466, 467, 468, 469, 470, 471, 472, 473, 474, 475, 476, 477, 478, 479, 480, 481, 482, 483, 484, 485, 486, 487, 488, 489, 490, 491, 492, 493, 494, 495, 496, 497, 498, 499, 500, 501, 502, 503, 504, 505, 506, 507, 508, 509, 510, 511, 512, 513, 514, 515, 516, 517, 518, 519, 520, 521, 522, 523, 524, 525, 526, 527, 528, 529, 530, 531, 532, 533, 534, 535, 536, 537, 538, 539, 540, 541, 542, 543, 544, 545, 546, 547, 548, 549, 550, 551, 552, 553, 554, 555, 556, 557, 558, 559, 560, 561, 562, 563, 564, 565, 566, 567, 568, 569, 570, 571, 572, 573, 574, 575, 576, 577, 578, 579, 580, 581, 582, 583, 584, 585, 586, 587, 588, 589, 590, 591, 592, 593, 594, 595, 596, 597, 598, 599, 600, 601, 602, 603, 604, 605, 606, 607, 608, 609, 610, 611, 612, 613, 614, 615, 616, 617, 618, 619, 620, 621, 622, 623, 624, 625, 626, 627, 628, 629, 630, 631, 632, 633, 634, 635, 636, 637, 638, 639, 640, 641, 642, 643, 644, 645, 646, 647, 648, 649, 650, 651, 652, 653, 654, 655, 656, 657, 658, 659, 660, 661, 662, 663, 664, 665, 666, 667, 668, 669, 670, 671, 672, 673, 674, 675, 676, 677, 678, 679, 680, 681, 682, 683, 684, 685, 686, 687, 688, 689, 690, 691, 692, 693, 694, 695, 696, 697, 698, 699, 700, 701, 702, 703, 704, 705, 706, 707, 708, 709, 710, 711, 712, 713, 714, 715, 716, 717, 718, 719, 720, 721, 722, 723, 724, 725, 726, 727, 728, 729, 730, 731, 732, 733, 734, 735, 736, 737, 738, 739, 740, 741, 742, 743, 744, 745, 746, 747, 748, 749, 750, 751, 752, 753, 754, 755, 756, 757, 758, 759, 760, 761, 762, 763, 764, 765, 766, 767, 768, 769, 770, 771, 772, 773, 774, 775, 776, 777, 778, 779, 780, 781, 782, 783, 784, 785, 786, 787, 788, 789, 790, 791, 792, 793, 794, 795, 796, 797, 798, 799, 800, 801, 802, 803, 804, 805, 806, 807, 808, 809, 810, 811, 812, 813, 814, 815, 816, 817, 818, 819, 820, 821, 822, 823, 824, 825, 826, 827, 828, 829, 830, 831, 832, 833, 834, 835, 836, 837, 838, 839, 840, 841, 842, 843, 844, 845, 846, 847, 848, 849, 850, 851, 852, 853, 854, 855, 856, 857, 858, 859, 860, 861, 862, 863, 864, 865, 866, 867, 868, 869, 870, 871, 872, 873, 874, 875, 876, 877, 878, 879, 880, 881, 882, 883, 884, 885, 886, 887, 888, 889, 890, 891, 892, 893, 894, 895, 896, 897, 898, 899, 900, 901, 902, 903, 904, 905, 906, 907, 908, 909, 910, 911, 912, 913, 914, 915, 916, 917, 918, 919, 920, 921, 922, 923, 924, 925, 926, 927, 928, 929, 930, 931, 932, 933, 934, 935, 936, 937, 938, 939, 940, 941, 942, 943, 944, 945, 946, 947, 948, 949, 950, 951, 952, 953, 954, 955, 956, 957, 958, 959, 960, 961, 962, 963, 964, 965, 966, 967, 968, 969, 970, 971, 972, 973, 974, 975, 976, 977, 978, 979, 980, 981, 982, 983, 984, 985, 986, 987, 988, 989, 990, 991, 992, 993, 994, 995, 996, 997, 998, 999, 1000.

